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The Madras Forest College Magazine.

(PUBLISHED QUARTERLY).

Vol. XII] DECEMBER 1927. [No. 2

A Useful Hint in Road Alignment.

There are occasions when the staff is not distinctly visible through the Ghat Road Tracer. The causes are various. Clearing the line throughout, means time, labour, and money, and may not be justifiable in lines which are not final, or are subject to subsequent alteration.

While aligning for a cart road, in the lower slopes of the Karian shola, where Ochlandra travancorica, Lantana camara, and sometimes a lot of young Mesua etc., regeneration (which it is a pity to cut) try the eye, I found that (1) reflection of a ray of sun-light by a small cheap mirror (about two pies is the cost) from the bulls eye of the staff, or (2) where a ray of sun-light is not conveniently available, due to the density of the canopy or other cause, flashing a ray of light from an ordinary cheap twelve-anna pocket electric torch (so-called) held at the position of the bulls eye on the staff, very considerably facilitated matters. Of course light can not be expected to penetrate a mass of leaves, or through the stems of solid trees, which will have to be removed, or other methods adopted.

In the Karian-shola while my students could align only 2,000 feet without these aids on the first day, on the three succeeding days they aligned 4,000, 4,000, and 3,600 feet respectively, using these devices to guide their eye. The work was only 3,600 feet on the last day, due to our having reached our terminus.

Even in deciduous forests, where Lantana Camara, Caesalpinia mimosoides, and other growth intercept distinct vision, though often to a greater degree, I think the trick worth trying, though the progress will necessarily be less than in the comparatively open (from under-growth point of view) sholas. Of course there is no provision by Government for the purchase of an Electric torch for this purpose, and I used my own Electric torch. But as a six anna Daimon or Eltax battery (let alone costlier Ever-readies, etc.,) is good for about 300 stations at the least, one minute flash at each station, the financial question does not assume prohibitive magnitude.

M. S. Raghavan,

Madras Forest Service,

Instructor, Forest College, Coimbatore.

Forest Fire and Its Relation to Man.

The chief danger to the timber in forests is fire, and this is caused in many cases by the neligence of the people. The dry deciduous forests are generally filled with combustible material, which takes fire instantaneously. The hill tribes and the ignorant people set fire to the forest without considering the effeets of such fire to the young crop, as well as to the old. Inspite of the strict rules in force, and adequate supervision in these forests, severe forest fires occur pretty often and destory the young growth. It has been stated that in India about 70 per cent of the fires are caused by graziers, 20 per cent by the hill tribes, and the rest by way-farers, and other agencies. Hence, the chief agency of forest fires is man. The man who sets fire to the forest does not understand how much loss he is incurring to himself and others by his act. The nation is put to loss by such fires, and since man is the unit of a nation, he is also a loser. Unless every one who causes fire, understands his responsibility and the loss which he is causing, there will be no way of stopping such forest fires, which occur year after year. The department may take any number of preventive and precautionary measures, still there is no guarantee that they will work out successfully if there is no co-operation from the people.

In the native states, forest fires are not uncommon, and are mainly due to the scanty means of fire protection; and if these fires are allowed to cross over to the neighbouring government forests, a greater loss is caused. When the adjacent house is on fire the man next door

tries his best to prevent its coming to his own and protects his property from being destroyed; so also the government has to take care of their forest property when the adjacent private forests are on fire.

Apart from this, it forms one of the duties of Rangers and forest subordinates to co-operate with the public and especially the villages near the forest and explain to them the consequences and the loss which a nation suffers from such fires. Also the department has given many concessions to the people adjacent to the forest. With all these liberal measures of the government and the co-operation of the subordinates, we still find the fires occuring in the fire season.

"The American Forests" says "the American public has accepted the statement "Everbody loses when the forests burn" but the knowledge exists only as an academic statement. We have learned that morons and criminals are leeches on the public welfare, but we have not yet eradicated the old, old view point that one's family is his property and that a son gone wrong is primarily the fathers' rather than public loss." This statement undoubtedly holds good in our case also.

In our country we have not yet introduced the up-to-date methods of fire protection as in America and on the continent. Even in America and on the continent where forestry has far advanced, they cannot check all their fires with all their efficient fire protection. It is no wonder that fires are common in our forests. In order to locate the fires at their out-break well erected watch towers or look-out stations such as employed in America, should be introduced in our

forests. Such an arrangement might reduce the danger of fire damaging the forests, since they afford the best means of locating forest fires so that they may be extinguished before they become destructive. An efficient fire protection staff may be maintained so that there is no necessity of running about for help.

A tax of one anna per Rupee or even more may be charged on all right holders, private forest owners and on all purchasers of timber, as the fire protection tax. Of course this might not be practicable in our country where the people are poor and any additional tax will be a great burden. But when the levy of such a tax is rendered possible, we can maintain up-to-date and efficient fire protection staff.

A. S. B.

Forest life—A Self-sacrifice.

It will, no doubt, sound strange to many people why Forest life is a self-sarifice on the part of foresters (Rangers, foresters, and their subordinates, especially the former two), when they are paid for it as much as anybody else; but a closer study of this life will show that it is really so.

A forester, from the very day he assumes charge of his office is cut off from society, the city life of mirth and glee, and the rest of the world, but has instead, to make friends with 'the fowl and the brute' which are pretty costly friends too. His duties evidently, take him to the jungle and he has not to hesitate to go to the remotest corner of it, no matter be it the very home of wild animals, but with what

protection?—a bill-hook, or an axe or none at all. How many times must a forester have narrowly escaped a deadly poisonous snake, an elephant, a tiger and the like! Nay, many a forester have even fallen victims to these animals. Apart from this, he is not quite safe with the jungle tribes too, with whom his duties bring him in bad books and who are always maliciously on the look-out for an opportunity to average upon him for the so-called wrongs done to them, so that instances are not uncommon, of forests murdered in cold blood by these tribes.

At home too a forester has no amusement, but is tied to the table for a long time. Out-door games, are almost unknown in the ranges; in indoor games, there is lack of partners, so that only books, magazines and papers come in for his recreation; but after all how long can they alone really amuse a man, who is born with a love for the company of man? The forester has simply to sacrifice it. Some may contend as to why he does not live with his family, and find a sweet home; but if he has children receiving education, what is he to do? Either sacrifice their education and ruin their future life which he shall not, or send them to hostels which he cannot afford to do, being ever so costly an affair. On the other hand, more often than not, he is in unhealthy places devoid of medical aid, where he wouldn't like to get his family even if he could, so that ultimately he has to deny himself the pleasures of a sweet home also while his city brother has all these comforts. So much is he confined to the jungle that when he goes back to the cities on some holidays, he finds so many changes having crept in there during his absence, that he feels himself a stranger in the places, and misses many familier figures in the society.

Generally a forester lives a comparatively shorter life; for one thing because, as afore-said, he passes most of his time in unhealthy places, devoid of medical help, but chiefly because he is seldom able to get proper food after a heavy work. His city brother gets the choicest of dishes at regular hours, but for him there is only a limited number of dishes, whether he relishes them or not. His duties too, usually are such that he cannot have regular meals and often has to forego some. Besides he gets so accustomed to the strenuous life he leads that when after retiring he gets a poor rest, he feels the loss of his young spirit which often tells upon his health.

Often, city people while spending a week end in the forests have found them exhilerating and expressed their desire to be there for ever, little realizing the risks involved in forest life. It is only their temporary feeling on account of the change of life which would vanish equally soon if once they take to this life and they would be reminded of the following lines of Alexander Selkirk:

> "Oh Solitude! Where are the charms
> That sages have seen in thy face?
> Better dwell in the midst of alarms,
> Than reign in this horrible place."

'Forest life—a self sacrifice' appears a paradox but is it not really so, when with all this a forester is not destined to see the fruits of his labours? He plants the trees only for others to fell them. He renounces his comforts—nay even his life, for the welfare of the future generations, though not in vain for, has he not the precious satisfaction compensating for this all that 'by the sweat of his brow he is

earning his bread' and that he is doing some proficient service to mankind —a duty that every one owes. Such a sacrifice is well worth the while.

BHOJ. B. WADHWANI,
M. F. C. (1926–28) Dn.

EXTRACTS.

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1. The Sweetest Plant in the World: Stevia Reboudinna Hemsl :—

This plant belongs to the Compositæ, and originates in Paraguay, where the inhabitants call it "Kaáheé." It is of an erect habit and reaches a height of 70–90 c. m. Its leaves contain a substance whose sweetening power is 200 times that of common sugar.

This substance is incapable of fermentation, and is consequently very useful for diabetics, and for sweetening syrups etc. Its harmlessness however still remains to be proved experimentally.

The plant was discovered in 1899, and was introduced into the botanic garden of Rio de Janeiro in 1918, where it has grown well. A certain number of plants obtained from seed are undergoing experiments in the United States.

Its propagation is easily effected by cuttings, even by a single internode, which a week after planting sends out a shoot, the latter reaching a length of 15 c.m. in a month's time.

* * * *

2. The Cultivation of 'Annatto.' (or 'Arnotto'; Bixa Oellana. L.)

Hopkins, R. A. The journal of the Board of Agriculture of British Guina, 1927. Vol. XX No. 1. p. 33.

The Annatto (*Bixa Orellana L*) is a small tree, native of Tropical America, being also cultivated in many other tropical countries. It grows well in all soils from sea level to an altitude of 3,000 feet.

It is reproduced by means of seed either in nurseries or directly where it is to grow permanently. . . . Slight shade should be afforded to the young plants until they become well rooted. . . . In normal conditions fruit formation starts about 18 months after planting and continues for many years.

The fruit, which consists of two valved capsules, is of a fine dark red colour; it is covered with prickles and contains about 40 seeds surrounded by a ruddy pulp from which the commercial colouring matter is obtained. Collection is made when the capsules have assumed a reddish tint, and are about to open. The writer recommends cutting the part of the branch which bears the fruit in order to keep the tree at a correct height and to stimulate future production.

The fruit is dried in the sun, spread out on mats; after 3 or 4 days the capsules open letting out the seeds which cleaned and sifted are replaced in the sun. Complete drying preserves the colour, and prevents the seeds from becoming mouldy, they are then placed in double bags and sold as soon as possible.

The average yield of dry arnotto seeds in India is 500 to 600 lbs., per acre. In the territory of the straits of Malacca 5 cwt. per acre are obtained from the first crop, and a still higher yield is expected from successive crops. . . . It is stated from Australia that a regular sale of the above mentioned product is assured at a price not less than

£ 30 per ton, and that with good methods of cultivation this price may rise to £ 40—45 per ton. Annanto which was formerly used for dyeing † cloth now serves as colouring matter for butter, cheese and margarine."

—Extracts from *International Review of the Science and Practice of Agriculture.* July 1927.

3. Chicle, Source of chewing gum :—

"Chickle" is a kind of gum mastic which is obtained by tapping the trunk of a tree *Achras Sapota, L,* belonging to the family Sapotaceæ. . . . This tree commonly called "Sapodilla" is the only plant which yields the true chickle.

. . . The latex is caused to issue from the tree by means of series of oblique confluent incisions circling the tree, made, from below upwards, with a long knife over the whole height of the trunk. From 1 to 60 quarts of latex are obtained from each tree. These incisions are made once in the year, after which the tree is left untouched for a period of 4 to 7 years in order to regain its necessary vigour for another tapping; some trees however do not regain sufficient strength, and a few die. . . .

Each tree can yield on an average 6 to 12 lbs. of chickle.

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† In combination with the red powder of *Mallotus Phillipinensis.* a bright orange red colour is obtained, used largely for dyeing silks. The dye is fleeting. Its use has been ousted from India to a great extent, by the introduction of aniline dyes.

The latex is collected by drops in a bag placed at the base of the tree. . . . It is evaporated in 40–50 gallon iron or aluminium caldrons for 1 or 2 hours, stirring all the time so that the gum remains in the centre of the caldron until it contains 33% of water when it is moulded into bricks weighing about 25 lbs. It is then specially treated and made into chewing gum.

—*American Forests and Forest Life. Vol. 33 No. 400.*

4. Mysore Forests :—

The following are extracts from the Annual report of Forest administration in the Mysore State for the year ending 30th June 1925.

" Natural regeneration may be considered to be fair all over, except in a few districts. In certain regions, Teak, Sandal, White Cedar, and Mesua have done well, but *Kiral bogi* (Hopea parviflora) has not done as well as last year. In the deciduous forests, ***Terminalia tomentosa***, ***Pterocarpus Marsupium*** did well; in the semi-evergreen forest, ***Xylia xylocarpa***, ***Lagerstrœmia lanceolata***, ***Artocarpus hirsuta***, ***Bischofia javanica***, and in the Maidan forest there was satisfactory regeneration of ***Acacia catechu***, ***Anogeissus latifolia***, ***Bassia longifolia***, ***Albizzia odoratissima*** etc.

Reproduction by coppice has been generally satisfactory.

Of the 101 acres added on to the regular plantations in the State, 92 acres have been planted with Teak, and the rest with ***Terminalia tomentosa*** and ***Eucalyptus***.

Dalbergia sissoo has done so well wherever it has been tried that its introduction on a larger scale in the Maidan and Semi-Malnad

forests where fuel and small timber is the chief demand is worthy of consideration. The introduction of this tree into all the plantations in the Bangalore and Kolar districts will probably solve the fire-wood problem of Bangalore.

* * * *

The quantity of timber sold was much larger than in the previous year, the demand amounting to Rs. 8,80,490, as against Rs. 7,29,559, of the previous year.

The quantity of Sandalwood collected and prepared has been nearly twice as much as in the previous year, and the net sum realised by the sale of Sandalwood oil has been Rs. 17,47,758 as against Rs. 13,24,836 of the preceeding year.

* * * *

5. Exploding wood-chips :—

The use of steam to explode wood chips into fibre is the ingenious process at the basis of a new method for producing synthetic lumber from saw mill waste.

The fundamental process consists in subjecting chips of a uniform size to a steam pressure of 800 pounds for 4 or 5 seconds. Then by an instantaneous release of the pressure the chips are made to explode into millions of fibres. To form boards, the exploded fibre is refined, passed over a fourdriner similar to a paper machine and placed in a press. Almost any desired degree of hardness may be secured by simply varying the pressure.

No glue or other artificial binder is required to consolidate the fibre. The product is all wood, it has a tensile strength of from 4,000 to 5,000 pounds per square inch, it is knotless, of very light weight, and a good insulator. The uses to which it is said to have already proved satisfactory include desk tops, card tables, radio panels, wall board, panelling, and insulation.

* * * *

6. Forest fire :—

The inflammability of the leaves, twigs, branches and other litter on the forest floor, in which fires start or spread, depends upon the amount of moisture they contain. It has been found that if these materials contain more than 25 per cent of their dry weight of moisture, fires will not start. The amount of moisture in these materials depends upon the rainfall and the relative humidity of the air.

The direct damage from fire may be small but the indirect damage is the larger loss. It is not what the fires burn up, but what they prevent from growing that truly measures the damage they cause. This is forest devastation.

* * * *

7. Elephant fire brigade in India :—

A remarkable story of how a herd of wild elephants conquered a forest fire on the south-west coast of India, has been published by the Indian News Service.

It appears that during a gale a big tree was uprooted and blocked the Travancore highway. A crew of natives was detailed to clear the road, and to lessen their work attempted to burn the tree.

When darkness came the labourers returned to the safety of the custom house, leaving the fire to spread to the adjoining woods. According to the report, the leader of a roaming band of wild elephants discovered the blaze and immediately called his followers by loud trumpeting. Within a few moments a well disciplined band of dusky four-footed firemen were busily employed with their trunks as hose turning forty streams of water on the blazing tree and on the burning woods. A small stream near by was sufficient reservoir for them to draw their supply of water. Perhaps as a matter of revenge, the beasts after smothering the flames, dragged the fallen tree into the middle of the road and left it there.

—American Forests and Forest Life; October 1927.

* * * *

8. Artificial silk from wood :—

In the Canadian International Paper company at Temiskamiñg, Quebec, the experience of half a century of pulpmaking now reaches its highest expression in the production of wood cellulose for silk weaving.

Wood selection begins in the forest. Only the tree species which research has determined will yield uniform wood cellulose provide the logs for use in the mill. Further selection is made when the logs are taken from the water at the mill. The logs are hauled from the river by a jack-ladder at the mill, and "barked" by means of specially designed machinery which removes all bark without bruising the logs. They are then stored for a definite period to permit thorough seasoning.

They are then cleansed in a 'hot pond' whence they are hauled up on their way to the wood preparing plant; but a final inspection awaits each log before it passes through the circular saws on its way to the chipping machines. The wood clips are screened to ensure even size and are then conveyed on a belt to the chip bins at the top of the digester building, there to await the first step of the chemical process.

The wood chips are fed into the digesters by gravity and the prepared acid is added. In the digesting or cooking the wood is resolved into its constituent parts, non-fibrous matter being separated from the pure cellulose. After cooking, thc pulp is thoroughly washed with pure water to remove all soluble matter, and is then bleached by electricity. The bleached stock then passes to the drying machines which are of special design to form sheets that are even in thickness and absorptive properties. It is then securely packed in bales for shipment to artificial silk (rayon) factories throughout the world.

—Forest and Outdoors—October 1927.

9. Amazing longevity of Bacilli :—

A remarkable result has followed the experiment made with deadly germs by Sir William Simpson, Director at the hospital of Tropical diseases. Twenty six years ago Sir William Simpson placed in a test-tube bacilli taken from a patient suffering from one of the most dreaded diseases. The tube was sealed and for all those years has remained so. Now he has devoted his attention to discovering whether the germs are alive. To his astonishment he found them to be alive.

A guineapig was inoculated with them and after showing well-known symptoms of the disease it died. Further work is proceeding, it being recognised that in the light of such happening it may become necessary to revise completely the views previously held on the longevity oi bacilli.

—*The Evening Standard.*

10. Utilization of turpentine and Rosin :—

Turpentine :—Probably the greatest quantity of turpentine is used for paints and varnishes. It has the power of thinning out these materials by its action as a solvent, as well as by its power of oxidation and evaporation.

It is widely used in the cloth printing industry especially for woolens and cottons and is extensively in demand as a solvent for rubber, gutta percha and like substances.

Turpentine is also used in a great variety of chemicals medicines and in a number of industries, for many specialised purposes.

Rosin :—The greatest single utility of rosin is in the manufacture of soap. It is combined with caustic soda and potash to form the various kinds of soap. It is also in great demand as a rosin sizing in the manufacture of paper. It gives certain kinds of paper a stiff coating or surface making them adaptable for printing and writing purposes. Without this sizing it would be impossible for certain papers to take colours, inks etc.

"Brewer's pitch" made of rosin, and a small admixture of turpentine, was widely used to coat the interiors of barrels and other

containers of beer and malted liquors. This coating gives the liquors a better taste and renders the barrels easy to clean.

Rosin is also in great demand for a wide variety of manufacturing enterprises, particularly in the making of linoleum, sealing wax, oil cloth, special flooring compounds and coverings, various kinds of inks, roofing materials, lubricating compounds, and a great variety of chemicals too numerous to mention.

An important use of rosin is for resin driers which are extensively used in the drying of oil paints, and varnishes. Rosin soaps are combined with metallic salts to form mettalic resinates, which are known in the trade as "Japan driers."

Rosin is distilled into rosin oils, which are produced under several different trade names. These oils are used in the manufacture of several greases and specialty lubricants, as well as solvents.

* * *

11. Wood pulp and paper :—

" Paper is a material composed of vegetable fibres formed artificially into thin sheets. The word 'paper' comes from the Latin word ***papyrus***, a name given to the Egyptian sedge and bulrushes of the Nile valley. The plant is said to have been used by the Egyptians as early as 2400 B. C., to make sheets for writing purposes as well as for wrapping and other mechanical uses.

. . . Wood has been demonstrated to be the best available raw material for the ordinary kinds of paper. . . . Before wood was widely introduced about 1850, paper was entirely made from cotton

and linen rags, esparto grass, hemp, straw and a number of other vegetable fibres.

. . . . Although the Egyptians are sometimes given credit for the earliest development in the manufacture of paper, more recent research has developed the fact that the Chinese must be credited with the first manufacture of paper. The art of paper making was invented in China about A.D. 105. It is likely that the art was transmitted from China across India to Persia and Arabia. The Saracens carried the practice of the art to Spain after their conquest of that country in the 8th century. From Spain it went to Italy where a papper mill was first operated at Fabriano in the year 1150. The first paper mill in France was established in 1189; in Germany 1390; in England in 1530; and in U. S. A. in 1690.

Requirements of desirable pulp-woods :—

(i) The wood should contain a long, strong and yet soft and tender fibre.

(ii) It should be relatively free from intercellular constituents, such as resins, gums, tannins, etc.

(iii) It should be white or nearly so, as bleaching at great expense is required to whiten some woods.

(iv) It should be sound, reasonably clear of knots, free from rot, dote, bark, pitch pockets and other defects.

(v) It should contain large quantities of available cellulose.

(vi) It must be available in sufficient quantities.

12. Veneers

The veneer industry has increased in importance in great strides within the last quarter of a century. It is generally considered a phase of 19th century industrialism, but historically veneers were used even in early Roman times. Piny, the younger, records how the Romans went to Greece to buy great tables with veneered tops in the manufacture of which the Grecians had attained great proficiency. It is said that the wealthy Romans paid very high prices for these tables faced with veneer of rare Eastern and Tropical woods. Pliny does not record how these veneers were made or what species were used and the industry was practically a lost art until the early part of the last century.

With the gradual depletion of our timber supply especially of the more valuable woods, it is a natural consequence that much of our high grade furniture, interior finish, doors, etc. should be made with the veneer face, and the centres or cores composed of mediocre woods or low-grade stock. This situation, of course, contributes to the more efficient utilization of our timber supplies, since the best woods or best quality of our more valuable woods can be reserved for the exterior faces, and the interiors made up of the cheaper woods and lower grades

Within the past decade the demands for veneers have increased remarkably, and most of our veneers are not used now for strictly veneer purposes in the original sense, but are utilized for a great variety of comparatively new uses, such for example as built-up stock, berry and fruit baskets, cheese boxes, crates, and packing boxes, drawer bottoms, trunk-stock, mirror-backing, panels etc.

Methods of making veneers :—

At the present time, the following methods are used in making veneers :—

(1) *The rotary cut process*, which consists of turning a log on a heavy lathe against a stationary knife, is the method by which about 90% of all of our veneers are made. Continuous sheets of veneer are cut off down to a 6 to 10 inch core. Since it is a rotary process, cutting with the rings of annual growth, it does not bring out the quarter grain or figure of the wood as well as the other processes by which cuts can be made along the medullary vays.

(2) *The slicing process*, which consists of rapidly moving a flitch of wood vertically downward against a cutting knife, is the method by which much of our quarter-cut oak veneers are made. This method is the least wasteful of the raw material of the three processes.

(3) *Sawed veneers* are considered most valuable because this process tears the wood fibre less than the other processes, and they can be worked up, and finished to better advantage. The method consists of moving a flitch of wood on a carriage against a circular saw which cuts a kerf of about 1/20 of an inch. Sawed veneers are stronger and less likely to show up defects after being used for some time. They are also reversible, and either side may be used as the face.

13. Shingles :—

The introuduction of shingle machinery proved to be a great economy in saving the available raw material. With the shingle saws,

shingles which included knots, cross grain, etc., could be made not only from butt logs of the best trees, but from the tops and partially decayed butts.

Shingle machines were introduced (in America) on a commercial basis about 1880. . . . . There are approximately 350 shingle mills in Washington at the pesent time, most of which are operated as separate industries. Some of the larger shingle mills now have a daily capacity of from 100,000 to 250,000 shingles or more per day of ten hours.

Shingle woods must be (1) durable, (2) light, (3) capable of retaining nails without loosening and (4) straight and even grained. (Zinc nails are commonly used as they do not rust).

The material used for the manufacture of shingles comes to the mills in the form of bolts or logs. Very often the poorer quality of logs are separated and sold to the shingle mills since very excellent shingles can be made from hollow butted logs.

Practically all shingles are made in 16″, 18″, and 24″ lengths, and 4″, 5″, and 6″ widths. The thickness of a shingle is a direct criterion of its length of service, other conditions being equal, since erosion and wearing due to rains and the weather will often determine its usefulness. Shingles must be thick enough to resist the stress induced by alternate moistening by rain and drying by the sun.

Shingles are used for both roofing and siding, and in certain architectural designs lend a very attractive appearance to the structure. Stained shingles are especially coming into favour for siding either all or part of the building.

The competition of substitute materials for roofing purposes has become a serious problem with shingle manufacturers. The forms of substitutes for wooden shingles include a great variety, principal among which are asphalt, asbestos and combination shingles, tar-roofing, slate, tile, various metal forms, and several patent materials.

Those promoting the use of substitutes for wood shingles have used the fire hazard as their great argument, but most of the substitutes are much more expensive and in addition require heavier construction in the building because of their additional weight. Wooden shingles have the following distinct advantages: They are durable, relatively cheap, light in weight, and therefore require only light support; they do not rust or corrode; wood is an excellent non-conductor of heat; they are not affected by the wind if laid and nailed properly; they present a pleasing appearance and are easily laid.

Probably the most effective means of combating the fire hazard of the wooden shingle is its fire-proofing. The U. S Forest Products Laboratory has developed experimentally a method which may prove to be commercially practicable. Air-dried shingles are subjected to a treatment with a solution of borax in water. The shingles are kiln-dried to a moisture content of 10 per cent, and then treated with a solution of zinc chloride and dried. It has been determined that shingles subjected to this treatment still retain their fire-resistant qualities, after soaking them in running water for two weeks.

—Forest Products, their manufacture and use—By Nelson Courtlandt Brown, B. A., M. F.

14. A monumental bridge: 3500-foot Suspension Bridge across the Hudson River:—

A monumental suspension bridge which will sweep from shore to shore in an unbroken span of 3500 feet is to be built across the Hudson river, in New York. The total length from anchorage to anchorage will be 4800 feet each of the shore spans being 650 feet in length from the main supporting towers to the anchorages. The weight of the suspended structure will be 120000 tons. The total maximum pull on the wire cables will be 135,000 tons, and if eyebar cables are used, it will be 165,000 tons. The total load on the foundations will be 350,000 tons.

The following is a history of long-span bridges: The first and most notable of these is the Brooklyn bridge, completed in 1883, a suspension structure with a clear river span of 1596 ft., carried by wire cables. Seven years later was built the famous cantilever, Firth of Forth bridge in Scotland, which includes two cantilever spans each 1710 foot in length. This dimension was exceeded when there was opened, in 1917, the St. Lawrence Cantilever bridge, near Quebec, with a central span of 1800 feet. Other notable bridges are two suspension structures across the East River, (the Williamsburg bridge with a 1600 foot span, and the Manhattan bridge with a 1470 foot span.); the Bear Mountain Suspension bridge opened in 1924 with a central span of 1632 feet; and the Camden bridge across the Delaware, with a span of 1750 feet. This is to day the longest suspension span to be found anywhere in the world.

The proposed Hudson river bridge (with a span of 3500 ft.) will be, on completion, the greatest suspension bridge, or bridge of any

kind, for that matter, in the world. It will de understood that in a bridge of this great size the principal stresses are those due to the weight of the structure itself. So great is this, that the weight of the live load, consisting of motor cars, trains, and pedestrains is relatively small. This is not true of shorter suspension bridges, for in these, the weight of a moving train is in much larger proportion to the weight of the bridge.

This bridge will be subject at times to winds of high velocity. To resist the wind-pressure, there will be a horizontal windtruss worked into the upper floor of the bridge; but the principal resistance will be found in the enormous inertia of the bridge itself. This is so great that if the bridge were struck by a furious gust, such as might come in a thunderstorm, its force will be spent before the bridge moved appreciably in response to it. The high improbable *continuous* force of a strong wind would push the centre of the bridge not more than 12 to 18″ away from normal.

In the design a maximum lateral swing of 3 to 5 feet has been provided for. There will be vertical distortion, however, due to the fact that the steel cables will shorten up about 4 feet in cold weather, and will expand in hot weather, with the result that the centre of the bridge will be about 5 feet higher on a cold day than on a hot day.

The bridge is to be built in two stages. When the first stage is completed, it will provide a single upper roadway for four lines of vehicular traffic and two passenger side-walks. Later, to meet the growth of populatton and travel, the upper or roadway deck is to be widened and a lower platform will be provided. The bridge as thus

finally completed will provide for 8 lines of vehicular traffic and foot-walks on the upper deck, and for four or more lines of rapid transit tracks on the lower deck. The whole cost of the structure when finally completed will be about 75,000,000 dollars.

15. Inside-measurement rule :—

A very handy device for the use of carpenters and others requiring the services of this particular type of tool is what is called an 'inside measurement rule.' Inserted in a groove in one end of an otherwise ordinary folding rule is a length of calibrated brass-strip. This is marked accurately in inches and small fractions.

* * * *

16. Quick-loading lumber trucks —

Loading stands which permit lumber to be piled, ready for placement on the truck, are the latest time-saving devices in the lumber-industry. In use, the stands are placed and loaded with planks. The truck backs up, the front loader is removed, and the truck is backed further. The load of lumber then slides into place over rollers on the truck.

* * *

17. Microscope light :—

A new design of electric light has been invented for use in illuminating microscopic slides. It is horse-shoe-shaped and said to eliminate casting of shadows which tend to confuse the microscopist.

—Extract from "Scientific American" November 1927,

5 4

18. Notes on the Natural Regeneration of Eucalyptus:—

KESSEL, S. L. *The Australian Forestry Journal*, Sydney, 1926, vol. IX, No. 12, p. 324.

In Australia, says the writer, there is a general opinion that the seeds of almost all the indigenous trees must undergo the action of fire in order to be able to germinate.

Accurate observations made in different types of Eucalyptus forest have, on the other hand, proved that the effect of a fierce surface fire is the destruction of all the Eucalyptus seed which is found on the soil and in its upper layers. Natural regeneration is therefore due to seed which is still on the trees at the moment of the surface fire. Consequent on the above noted circumstances, three factors affect regeneration, namely :—(1) the frequency of years of abundant seeding ; (2) the extension of the period during which fertile seeds remain on the trees after ripening ; (3) the weight and structure of the seeds which affect the distribution of the latter. Where it is a case of Eucalyptus with fairly small light seeds, such as "Tallow wood" (*Eucalyptus microcorys* F. Muell) the seeds in falling are distributed over a more extensive area, while the heavy seeds of other species, such as "Jarrah" (*Eucalyptus marginata* Sm.) fall almost vertically. In the latter cases the number of trees left as seed bearers necessary for assuring natural regeneration becomes much greater, and the even distribution of these trees on the forest surface becomes an important factor for the purpose in question.

Rightly or wrongly, the burning of the surface of Eucalyptus forest will for many years to come be adopted in Australia as a means of assisting natural regeneration, and consequently a clear comprehension of the effect caused by fire in this respect becomes very important.

One consequence of the method of surface fires is that the fall of seeds, which germinate after the fire, takes place more or less contemporaneously instead of being spread over two or more years.

The germination of seeds fallen after a surface fire takes place under very good conditions because the seeds are in contact with the mineral soil and the seedlings have no difficulty in producing cotyledons.

Surface fires affect the growth of the young seedlings after the cotyledonary stage in two ways :—(1) They considerably reduce the live cover of the soil. In dry types of forest the struggle of the roots against the underwood is considerably diminished ; while in the moist type, where competition for the moisture of the soil is less intense, the young seedling commences life in conditions equal to those of the more succulent grass and consequently has greater possibility of succeeding in the struggle for light. (2) The ashes produced by the surface fires supply the plants with a nutrient in soluble form.

In certain forests of dry type these ashes constitute an excellent fertilizer. The writer cites, as example, that in a "Tuart" (*Eucalyptus gomphocephala* D. C.) forest in South-east Australia, in spite of the surface being covered with an abundant new growth, the seedlings had only survived in considerable numbers in beds covered with ashes.

The writer declares that the value of the ashes as fertilizer suffices to explain the above-mentioned fact, without any need for discussing the possible effect of the fire on the bacteria and protozoa of the soil.

The want of success of the new growth in the beds where the layers of ashes were very thick is, according to the writer, due to an excessive concentration of soluble salts.

It is intended, by means of further research, to determinf what salts are most likely to cause the seedlings in certain dry types oe forest to survive, with the object of obtaining satisfactory growth by means of partial sowings on cultivated areas or on bare places.

—International Review of the Science and Practice of Agriculture. September 1927.

Additions to the M. F. C. Library during September to January 1927 :—

1. Materials of construction as used in India. Vols. I and II ; by N. N. Mitra.
2. Practical Earthwork Tables—by N. N Mitra.
3. Modern Pise-building—House building with compressed or rammed earth—by Karl J. Elbrighton.
4. Fauna of British India –Hirudinea—By Harding and Moore.
5. A text Book of Paper making—By C. F. Cross, and Bevan.
6. Soil characteristics—By, Paul Emerson.
7. Forest Pocket Book ; compiled by S. H. Howard, I. F. S.
8. Cause of the Spike disease of Sandal—Reprinted from the Indian Forester, October 1927.
9. Forest Bulletin No. 68. Notes on the comparative economic cost of wood and metal sleepers in India, and cost of treatment.

10. Hoplocerambyx Spinicoris—an important pest of Sal.

11. Proceedings of the Forestry Congress, Rome, 1926. Vols. II and III.

12. Explanatory notes on Forest Law, compiled for the use of Students at the Imperial Forest College, Dehra Dun. III Edition.

13. Administration Report of the Forest Department, Travancore.

14. Administration report of the Conservator of Forests, Ceylon, for 1926.

15. Report on the operations of the Forest Department for the year ended 30th June 1927.

16. Working plan for the Dang Forests.

17. Burma Forest Bulletins: No. 15 and 18.

18. General list of Foresters in the Forest Department in the Madras Presidency 1st January 1927.

19. Indian Forest Records, Botany Series. Vol, XIII Part 1. Illustrations of Indian Forest plants—By R. N. Parker, I. F. S. F. C. H.

20. Review of applied Entomology. Series B. Medical and Veterinary. Vol. XIV 1926.

21. Report of Mr. C. S. Martin on the foreign markets for Indian Timbers, 1927.

22. Working plan for the Reserved Forests of Angul Bihar and Orissa, for the year 1927-28 to 1946-47.

23. Revised Working Plan of the Panch Mahals forests.

24. Annual Progress Report of Forest administration in the United Provinces for the period 1st April 1926 to 31st March 1927.

25. List of Rangers of the Forest Department Madras—Ist May 1927.

26. Classified list of Forest Officers in the Madras Presidency, corrected up to 1st July 1927.

Additions to the Gass Forest Museum for quarter ending Ist. December '27:—

CONTRIBUTION.		CONTRIBUTOR.
Forty five samples of timber	...	The Conservator of Forests, Utilization Circle, Burma.

Reviews and Publications received:—

We beg to acknowledge receipt of the following publications:

1. " The International Review of the Science and Practice of agricultural; August and September 1927.
2. " Rural India " October and November 1927.
3. " The Junglewallah November and December 1927.
4. The " Findlay College Magazine " December 1927.
5. " Manual of Forest Engineering and Extraction "—By J. F. Stewart, F. R. S. G S., Consulting Forest Engineer, and Lecturer in Forest Engineering, Edinburgh University; with an introduction by Professor E. P. Stebbing, M. A., F. L. S., F. R. S. E., Professor of Forestry at the University of Edinburgh.

Published by Messrs. Chapman and Hall, Ltd., 11 Henrietta St, London W. C. 2.—1927. Price 15/- net.

As Professor Stebbing says, the author is a practical exponent of the subject and the book is written from the purely practical point of view. It has indeed supplied a long-felt want to the student in Forest Engineering. It is copiously illustrated and the get up leaves nothing to be desired.

6. " Forest Products ; their manufacture and use "—Second Edition, Revised, 1927—By Nelson Courtlandt Brown, B. A. M. F., (Professor of Forest Utilization, New York, and Trade Commissioner to Europe, Department of Commerce, Washington).

Published by Messrs Chapman and Hall, Ltd., London.

xviii + 447 pages 6 by 9 ; 120 figs. cloth, $ 4 net.

The book embraces the principal commercial features in the production, manufacture, and utilization of the most important forest products other than lumber, in the United States.

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8—11—1927.

Gazette Notifications.

25—10—1927.

On the expiry of his leave, M. R. Ry. B. S. Kesava Vittal, E. A. C., is posted for special duty in the Tinnevelly District, and will work under the orders of the Conservator, V Circle.

M. R. Ry. P. Venkataraman Avl. E. A. C. is granted leave on average pay for three months with effect from 20th September 1927.

M. R. Ry. V. N. Seshagiri Rao Avl., E. A. C. of Forests, Lower Godaveri Division, granted leave on average pay for six weeks with effect from date of relief.

M. Amir Padsha Sahib Bahadur, E. A. C. of Forests, Chittoor, is granted leave on average pay for two months and twenty one days from 1st October 1927, and is also permitted to affix the Christmas and New year holidays to the leave.

8—11—1927.

M. R. Ry. B. S. Kesava Vittal, E. A, C., granted an extension of leave on average pay for two weeks with effect from 2nd Nov. 27.

M. R. Ry. M. S. Rangaswami, E. A. C., granted extension of leave on average pay on medical certificate for two months in continuation of the two months' leave already granted.

Mr. T. Clear, Conservator of Forests, extension of leave on half average pay for twenty days with effect from the 24th Nov. 27.

Mr. J. A. Wilson, Dy. Conservator of Forests, study leave for two months, to undergo a special course of instructions in saw doctoring in England. The leave should be taken from or after 11th December 1927.

8—11 –1927.

Mr. W. G. Dyson, D. F. O., the Nilgiris, leave on average pay for eight months from 20th March 1928 and, leave on half average pay for seven months in continuation thereof.

Mr. V. G. Darrington, Senior Instructor, Madras Forest College, leave on average pay for eight months from 3rd January 1928, and on half average pay for three months, and twenty days in continuation thereof.

Mr. R. S. Browne, Working Plans Officer, leave on average pay for eight months from 11th April 1928 or the date of relief.

Mr. H. G. Hicks, D. F. O. North Coimbatore leave on average pay for six months from 2nd January 1928 ane leave on half average pay for five months and twenty one days in cnntinuation thereof.

15—11—1927.

Mr. C. Mahony, E. A. C. of Forests, is, on the expiry of his leave attached to the Tinnevelly Division.

22—11—1927.

Mr· Saiyid Riazuddin Sahib, E. A. C. of Forests, on leave is permitted to return to duty on 16th Novembar 1927, before the expiry of of the leave granted to him, and he is attached to the North Cuddapah Division.

29—11—1927.

Mr. T. Clear, Conservator of Forests on return from leave to be Conservator of Forests IV Circle, Salem, *vice* Mr. K. R. Venkataramana Ayyar, granted leave.

Mr. B. K. Roy, D. F. O. South Cuddapah, granted an extension of leave on average pay for ten days with effect from 27—10—27.

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Notifications relating to Rangers.

31—10—1927.

The followlng promotion is ordered :—

With effect from 12-9-1927 *vice* Mr. O. Venkataramana Ayyar, Ranger I Grade, deceased :—

Mr. R. E. Lemos from I Grade Sub-protem to I Grade permanent.

FOREST ENGINEERING DIVISION :—

13—10—1927.

Mr. K. G. Monnappa, Ranger V Grade Logging Engineer's Division is granted leave on average pay for two months and eleven days with effect from 11th October 1927, or date of relief with permission to avail of the succeeding Christmas holidays.

25—10—1927.

The posting of Mr. Kandan, Ranger III Grade Chedleth on relief by Forester Nanjappa, to work in the Valparai Extension Project with head-quarters at Valparai ordered by the Forest Engineer in-charge Saw Mills and Extraction in his S. M. E/F. 9 dated 22-10-27 is approved.

23—11—1927.

Mr. A. K. Kandan, Ranger III Grade Saw Mills and Extraction Division, Olavakkot, is granted leave. on average pay for 26 days with effect from 19-8-27 after-noon.

13—12—1927.

Ranger Mr. B. K. Krishna Rao III Grade transferred from the First Circle is posted to the Forest Utilisation Division for the charge of Kasagod depot.

First Circle.

15—9—1927.

M. R. Ry. B. S. Sankara Iyer Ranger VI grade is granted extension of leave on half average pay on medical certificate for 4 months with effect from 12-9-1927.

22—9—1927.

Mr. W. S. Fernandez will be Range officer, Surada Range. He should proceed expeditiously and relieve Mr. P. Gopalakrishna Rao at once.

Mr. P. Gopalakrishna Rao will on relief join the Enumeration Party and work under the orders of the Assistant Couservator of Forests, Russellkonda. His headquarters will be Russelkonda.

8—10—1927.

M. R. Ry. D. Ramakrishnayya, Range officer, Surada Range, Ganjam District, is granted an extension of leave on average pay on medical certificate for 4 months in continuation of the leave for one month granted.

23—10—1927.

Mr. J. D. David, Range officer, Kukuluba Range, Ganjam District, is granted leave on average pay for 5 weeks from the date of relief. Trained Forester Niladri Rao will be in charge of the Range during Mr. Davids' absence.

M. R. Ry. D. Krishnaswamiah, Ranger VI grade, is granted leave on average pay for two months from date of relief under rule 84 of the Fundamental Rules.

2. On expiry of the leave granted to him i. e. 18-10-1927 M. R. Ry. P. Chengalreddi Ranger VI grade is transferred to the Parlakimidi Maliahs for the charge of the Chandragiri Range vice No. 1.

9—11—1927.

On expiry of the leave granted to him (25-11-1927) M. R. Ry. P. Doraswami Iyer, Ranger III grade, is tranferred to the Vizagapatam District for special duty on the Palakonda road works.

10—11—1927.

On expiry of the leave granted to him (26-11-1927) M. R. Ry. D. Ramakrishnayya, Ranger V grade, is posted to Upper Godavari for special duty on further reservation.

22—11—1927.

M. R. Ry. B. Krishna Rao, Range officer, Sathiavedu Range, is granted leave on average pay for 20 days from the date of relief.

Range officer Sreeharikota is to hold additional charge of Sathiavedu Range during the absence of No. 1.

11—12—1927.

Mr. M. Narasinga Rao Naidu, Ranger V grade subprotem, Ganjam is appointed as Senior Instructor of the Vernacular Training School for the 1928 session commencing from 9-1-1928 at Russellkonda, Ganjam District.

2. A. Niladri Rao, trained Forester, is appointed as Junior Instructor of the Vernacular Training School for the 1928 session at Russellkonda. He should join duty on 6-1-1928 forenoon.

14—12—1927.

M. R. Ry. D. Ramakrishnayya, Ranger V grade, is granted an extension of leave on average pay on medical certificate for 3 months in continuation of the leave for 5 months granted.

14—12—1927.

M. R. Ry. P. Chengalreddi Range officer, Chandragiri Range, Parlakimidi Maliahs is granted leave on medical certificate on average pay (subject to eligibility) for 3 months from the date of relief by Ranger D. Krishnaswamiah.

15—12—1927.

1. M. R. Ry. K. Raghava Rao, Ranger VII grade due on 1-1-1928 to Sathiavedu Range, Nellore District.
2. M. R. Ry. B. S. Sankara Iyer, Ranger VI grade, due on 12-1-1928 to Cherla Range, Upper Godavari District.

Second Circle:—

7—10—1927.

M. R. Ry. S. M. Krishnaswami Ayyar Ranger III grade is reduced to the top of the IV grade with effect from 5th October 1927.

11—10—1927.

M. R. Ry. K. S. Ramiah Ranger IV Grade is reduced by three places in the same grade (i. e.) instead of his rank being No. 12 in the IV. grade (in presidency printed list of Rangers corrected up to 1-5-1927,) it will be No. 15 in the same grade.

20—10—1927.

M. R. Ry. T. Paramasivam Pillay, Range officer, Chelama Kurnool South Division, is granted leave on average pay for one month from date of relief. On return from leave he will take charge of Ganganapalle Range of Anantapur Division.

M. R. Ry. G. Rama Rao, Ranger on special duty in Kurnool South, is posted to charge of Chelama Range.

22—10—1927.

M. R. Ry. K. Purushotama Rao, Ranger VI Grade, Kurnool West Division is granted an extension of leave on full average pay for 3 months on Medical Certificate from 22-9-1927, in continuation of the leave already granted for 2 months.

M. R. Ry. V. N. Subramanya Aiyar, Ranger VI Grade who is now No. 36 in the Presidency List of Rangers (corrected up to 1st May 1927) will be reduced to the bottom of the same grade i. e. his rank in the list will be No. 43, just after the last permanent incumbent in the VI Grade i. e. M. R. Ry. G. V. Subba Rao.

30—10—1927.

M. R. Ry. T. Sreeramulu Naidu Ranger VII Grade is reduced by 2 places in the same grade. He is now No. 7 in VII Grade (vide page 19 of the latest Presidency list of Rangers corrected up to 1-5-27) and hence he will be No. 9 in the same grade (i. e.) his name will be placed after P. V. Krishna Rao Naidu.

4—11—1827.

M. R. Ry. H. Thammayya Ranger III Grade, Dornal Range Kurnool East Division is granted leave on average pay for one month with permission to affix Christmas and New-Year Holidays with effect from 26-11-1927 or date of relief.

(2) Supernumerary Ranger N. Rajagopala Chetty, on special duty in the same division, is posted to relieve No. 1.

25—11—1927.

M. R. Ry. T. Sreeramulu Nayudu, Ranger VII grade, Anantapur Division, is granted an extension of leave on medical certificate for 4 months on full average pay from 11-11-1927 in continuation of 4 months' leave already granted.

28—11—1927.

M. R. Ry. C. R. Rajagopalan Ranger VI grade Kurnool West Division is granted leave on full average pay for one month and 5 days from 22nd September 1927 to 26th October 1927 (both days inclusive.)

2—12—1927.

M. R. Ry. D. N. Subrahmania Ayyar, Ranger VI grade, Kurnool West Division is granted leave on full average pay for 3 months and 12 days as follows:—

Leave without medical certificate for two days, viz. 1st & 2nd October 1927 and Leave on Medical Certificate for 3 months and 10 days from 3rd October 1927.

5—12—1927.

M. R. Ry. T. Paramasivam Pillai, Ranger IV grade, Kurnool South Division is granted an extension of leave on full average pay for one month from 5-12-1927 in continuation of one month's leave granted.

5—12—1927.

M. R. Ry. K. Purushothama Rao, Ranger VI grade, Kurnool West Division on return from leave on 22nd December 1927 is posted to the charge of Yerrakondapalem Range, Kurnool East Division.

11—12—1927.

M. R. Ry. T. M. Krishnamachari Supernumerary Ranger on special duty in Kurnool South Division is transferred to Cuddapah North Division for special duty.

The following Rangers are posted as Instructors for the Vernacular Training School Sessions to be held in Cuddapah North Division during the year 1928.

(a) M. R. Ry. B. H. Anandathirtha Rao, Ranger V grade, Bairluty Range, Kurnool West Division to act as Senior Instructor.

(b) M. R. Ry. A. Sitaramayya VI grade, Dhone Range, Kurnool West Division to act as Junior Instructor.

2. M. R. Ry. T. G. Sitarama Mudaliar Ranger VI grade, on special duty in Cuddapah South Division is posted to Dhone Range vice A. Sitaramayya on other duty.

15—12—1927.

M. R. Ry. K. S. Kamiah Ranger IV grade Kurnool South Division is granted an extension of leave (on medical certificate) on full average pay for 2 months from 13th November 1927 in continuation of the leave granted.

19—12—1927.

M. R. Ry. S. V. Duraiswamy Ayyar Ranger VI grade, Cuddapah South Division is posted on return from leave (11-1-1928) to charge of Badvel Range, Cuddapah North Division vice S. Chinnadurai Pillai granted leave.

Third Circle.

20—10—1927.

Mr. J. D. Theodore, Ranger, VI Grade on Working Plans duty in the Wynaad Division will be considered to have been on leave on average pay from 15-8-27 to 29—9—27 both days inclusive.

30—11—1927.

Mr. J. D. Theodore Working Plan Ranger IV Grade in the Wynaad Division is granted leave on average pay with effect from 17-11-1927 to 21-12-1927 with permission to avail himself of the Christmas holidays commencing from 22-12-1927.

12—12—1927.

M. R. Ry. M. N. Raman Pillai Ranger IV Grade on Working Plans duty in Mount Stuart is granted leave on average pay for 7 days with effect from 3rd January 1928 with permission to prefix the Christmas and the New Year holidays.

Fourth Circle.

10—10—1927.

1. M. R. Ry. T. D. Rajabahadur Mudaliar, Ranger VI grade, Namagiripet Range, is granted leave on average pay for four months from date of relief.
2. M. R. Ry., P. A. Krishnaswamy Mudaliar, Ranger IV grade on return from leave on 31-10-1927, is posted to the charge of Namagiripet Range, South Salem division.
3. M. R. Ry., C. N. Narasimachari, Ranger VI grade is posted to be in additional charge of Namagiripet Range in relief of Ranger T. D. Rajabahadur Mudaliar and until Ranger P. A. Krishnaswami Mudaliar joins.

18—10—1927.

P. B. Saiyid Yahia Sahib, Ranger V grade, Central Salem Division, is reduced temporarily for six months to VI grade from date of this order.

20—10—1927.

M. R. Ry., I. Z. Robert Paul, Ranger V grade, on return from leave on 5-11-1927, is posted to the charge of Shevaroy North Range Central Salem division.

2. M. R. Ry., V. D. Ramalingam Pillai Ranger, VII grade, now in charge of Shevaroy North Range Central Salem Division on relief by No. 1 is posted to special duty in the South Salem Division.

4—11—1927.

M. R. Ry., V. D. Ramalingam Pillai, Ranger, VII grade is from date of relief in the Shevaroys North Range, granted leave on average pay for one month.

2. He should join the special duty work assigned to him in South Salem after return from leave.

12—11—1927.

Mr. E. W. Fernandez, Ranger, V grade, South Salem division, is reduced from 1-10-1927 temporarily for one year to the VI grade.

2. The period of his absence from 13-9-1927 until he rejoins his original special duty work in the South Salem division or produces a proper medical certificate from a District Medical Officer to whom the Ranger may be referred by the District Forest Officer, will be treated as suspension counting towards pension.

21—11—1927.

1. M. R. Ry., T. V. Govinda Rao, Ranger V grade, on return from leave on 3—12—1927 and on production of certificate of fitness is posted to the charge of Krishnagiri Range, North Salem division.

2. M. R. Ry., P. Mathuramuthu Pillai, Range II grade, now in charge of Krishnagiri Range, North Salem Division, on relief by No. 1 is posted to the charge of Denkanikota West Range, North Salem division, vice Mr. R. E. Lemos, Ranger I grade, reported sick.

23--11--1927.

Mr. R. E. Lemos Ranger I grade in charge of Denkanikota West Range is granted a month's leave on average pay on medical certificate from the date of relief.

M. R. Ry. S. Rangaswamy Aiyangar Ranger V grade on spike duty will be in additional charge of Denkanikota West Range during leave of No. 1 as per Fourth Circle Conservator's orders.

6—12—1927.

1. M. R. Ry. T. E. Vardachari, Ranger III grade, is transferred from Shevaroys South Range, Central Salem Division, to charge of Odugathur Range, Vellore division.

2. M. R. Ry. S. Ramalinga Ayyar, Supernumerary Ranger, now on special duty, Central Salem division, ts posted to the charge of Shevaroy South Range temporarily to relieve No. 1 at once.

3. Mr. P. B. Saiyid Yahia Sahib, Ranger VI grade, now on special duty in Central Salem division, is transferred to Vellore division to charge of Alangayam Range.

4. M. R. Ry. S. Duraiswamy Ayyar, Ranger 4th grade, on relief by No. 3, is granted leave on avarage salary for 4 months from date of relief.

5. M. R. Ry. T. S. Sankaranarayana Ayyar, Supernumerary Ranger, now in charge of Odugathur Range will, on relief by No. 1, continue to remain attached to Odugathur Range until further orders.

14—12—1927.

Mr. N, S. Ghate, Assistant Conservator of Forests on completion of his training in the Nilambur division on 10-12-1927 is posted to charge of Shevaroys South Range, (head-quarters Salem), Central Salem Division.

2. Supernumerary Ranger S. Ramalingam Ayyar is to remain attached to Shevaroys south Range on special duty.

15—12—1927.

M. R. Ry. K. M. Gopalachari, Ranger IV grade, on special duty, Vellore division is transferred to North Salem to charge of Denkanikota West Range to relieve M. R. Ry. S. Rangaswami Ayyangar, Ranger V grade who is in temporary charge, as expeditiously as possible.

Fifth Circle.

16—10—1927.

M. R. Ry. N. S. Eswaran, Ranger VI Grade, Punachi Range, South Coimbatore District is granted leave on average pay for 3 months from date of relief.

2. Supernumerary Ranger K. O Anandan, is appointed to act Vice No.1.

30—10—1927.

Ranger T. G. Sankaran Nair is reduced to the bottom of the III Grade.

4—11—1927.

M. R. Ky. A. B. Fenn, Ranger V grade, Madura District is granted leave on average pay from 3rd October 1927 to 23rd December 1927 with permission to affix the Christmas and New year holidays.

16—11—1927.

M. K. Ry. A. K. Kunhunni Nayar, Ranger, V grade, on return from leave is posted to Kollegal Range charge.

2. M. R. Ry. S. Narayanaswamy Ayyar, Supernumerary Ranger, on relief by No. 1 will be on special duty in Kollegal District for check and removal of patta sandalwood by private dealers.

11—11—1927.

The leave granted to M. R. Ry. B. S. Ramaswamy Ayyar, Ranger IV Grade, Kollegal, is extended by 1 month and 6 days on average pay with permission to avail himself of the Christmas and New year holidays.

Sixth Circle.

21—10—1927.

Mr. A. Joseph, Ranger VI grade, in charge of Mudumalai Range will, on relief by Mr. N. Trimurti, Assistant Conservator of Forests, be attached to the Mudumalai Range pro. temp.

5—11—1927.

Supernumerary Ranger P. A. Madhavan is transferred from Nilambur to the Nilgiris division for special duty. To join forthwith.

28—11—1927.

M. R. Ry. N. Gopalan Nair, Ranger VI grade is, on return from leave (15th December 1927) posted to the Nilambar Division for special duty.

5—12—1927.

Mr. M. Ambu, Ranger III grade, in charge of Begur Range, is granted leave on average pay for 1 day on 10th November 1927 and leave on average pay on medical certificate in continuation thereof for 1 month and 5 days.

2. M. R. Ry. P. Sankunni Nair, Ranger VI grade, is posted to the charge of Begur Range Vice No. 1.

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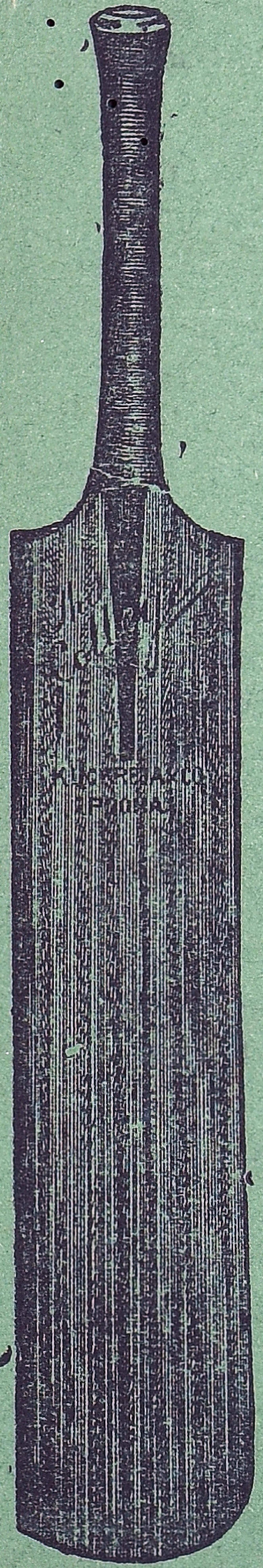

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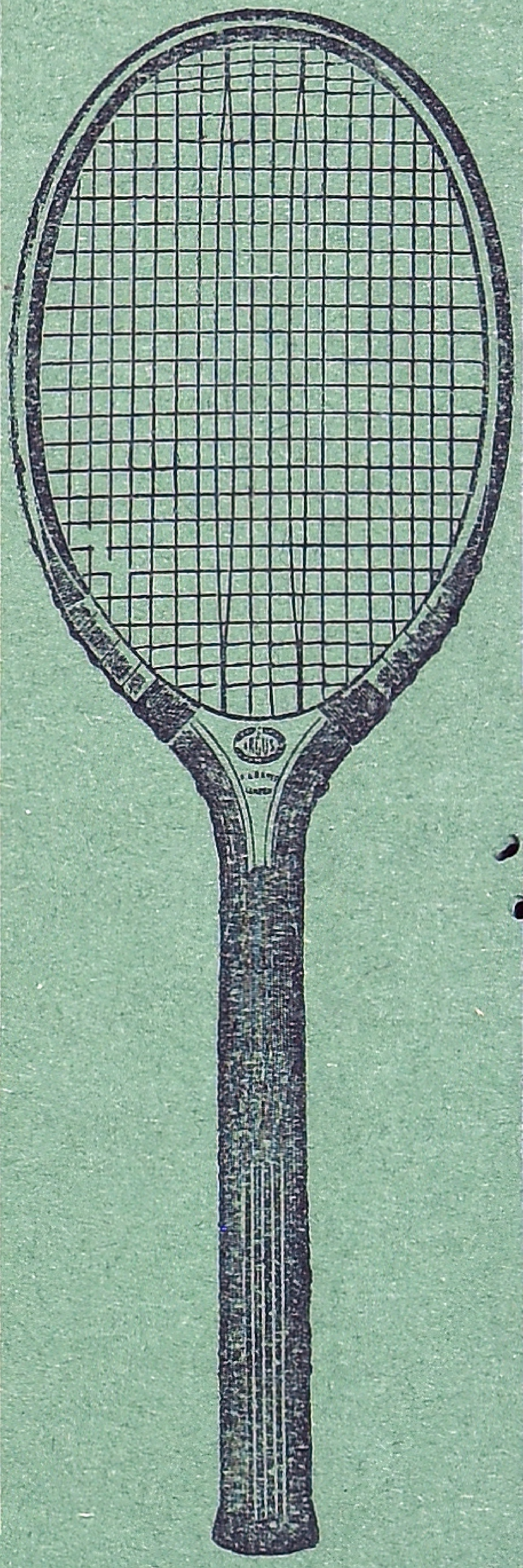

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